



Accuracy•Reliability•Speciality

Catalogue of Mineral Insulated Cable

About SICC

As the most trustful supplier working with more than 50 partners in 30 countries all over the world , SICC group has focused on bare thermocouple wires, mineral insulated cables, thermocouple and RTD probes since 1998 in China.

With 35000 square meters manufacturing base for 900 tons annual of nickel alloy wires, mainly bare thermocouple wires as well as resistance wires. Our advanced melting skills are combined with the chemical composition control to achieve the highest quality products from .O.D=0.01 to 8.0 mm or AWG/SWG 0-50 solid and stranded wires.

SICC has 10 production lines for 4 million meters annual of mineral insulated cables for thermocouple and RTD, constantly refined and improved the technology,including accuracy, powder grades,sheath materials, configurations,all our MI cable can meet IEC and ASTM standards with high purity sea powder MgO $\geq 99.6\%$, from.O.D=0.25 to 12.7mm or 0.01"to 0.5". The high quality MI cables can make in quantity wide range of thermocouple rods,RTD rods and MI heaters assemblies for varieties of industrial and commercial uses.

Our manufacturing plants are only 2-hour drive from Shanghai, the biggest metropolitan city with world-class convenient logistic network, which can make sure our products will be sent to you on time either by air or by ship. We understand your needs and concerns, and we will provide further details regarding our products and services. Contact us now for the most competitive quote.

Mineral insulated thermocouple cable

Mineral insulated thermocouple cable is used to insulate thermocouple wires from one another and from the metal sheath that surrounds them. MIMS Cable has two (or four when duplex) thermocouple wires running down the middle of the tube. The tube is then filled with magnesium oxide powder and compacted to ensure the wires are properly insulated and separated. Mineral insulated cable helps to protect the thermocouple wire from corrosion and electrical interference.

SICC is one of the world's leading supplier of mineral insulated cable with 10 production lines and 4 million meters annual.



Over the decades, we constantly refine and improve the technology, including accuracy, powder grades, sheath materials, configurations, as it remains the heart of our products to this day.

SPECIFICATIONS DETAILS

We can supply mineral insulated thermocouple cable type K/J/N/E/T from O.D=0.25 to 12.7 mm or 0.01" to 0.5" with SS304/321, SS316, SS310, Inconel600/601, Nicrobell sheath and etc.

Also If you have a special mineral insulated cable application, contact us without hesitate, our very experienced engineers will help you to find out the solution.

DIA(mm/inch)	SS304/321		SS316		SS310		INCONEL600		NICROBELL	
	Simplex	Duplex	Simplex	Duplex	Simplex	Duplex	Simplex	Duplex	Simplex	Duplex
0.25/0.010	•		•		•		•			
0.5/0.020	•		•		•		•			
1.0/0.040	•		•		•		•			
1.5/0.060	•		•		•		•		•	
1.6/0.062	•		•		•		•		•	
2.0/0.079	•	•	•	•	•	•	•	•	•	•
2.4/	•	•	•	•	•	•	•	•	•	•
3.0/0.120	•	•	•	•	•	•	•	•	•	•
3.2/0.125	•	•	•	•	•	•	•	•	•	•
4.0/	•	•	•	•	•	•	•	•	•	•
4.5/0.177	•	•	•	•	•	•	•	•	•	•
4.8/0.188	•	•	•	•	•	•	•	•	•	•
5.0/	•	•	•	•	•	•	•	•	•	•
6.0/0.236	•	•	•	•	•	•	•	•	•	•
6.4/0.250	•	•	•	•	•	•	•	•	•	•
8.0/0.313	•	•	•	•	•	•	•	•	•	•
9.5/0.375	•	•	•	•	•	•	•	•	•	•
10/	•	•	•	•	•	•	•	•	•	•
10.8/	•	•	•	•	•	•	•	•	•	•
12.7/0.500	•	•	•	•	•	•	•	•	•	•

THE SIZE'S TOLERANCE

Outside Sheath Diameter	±0.002" (±0.05mm) or ±1% of nominal diameter
Wall Thickness	10% of sheath diameter as a minimum
Wire Diameter	15% of sheath diameter as a minimum for 2 wires , 12% of sheath diameter as a minimum for 4 wires, 9% of sheath diameter as a minimum for 6 wires
Calibration	To meet special limits of error as defined in ASTM-E230 and IEC 60584-2

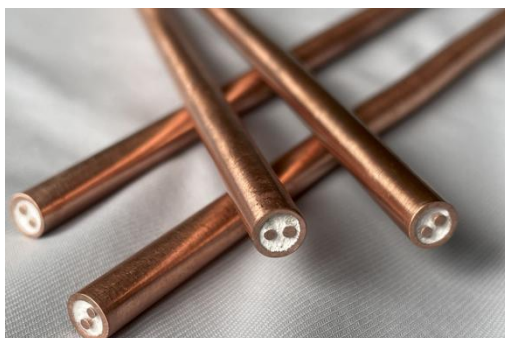
QUALITY GUARANTEE

All SICC' thermocouple cables are manufactured to meet the requirements specified in IEC61515 and ASTM E585, and the calibration tolerance of IEC584 and ASTM E230. We provide calibration results for all mineral insulated cable with each shipment, including EMF values, accuracy, batch number, raw materials chemistry, lab environment condition, etc. Each order has only one job number for tracking. Calibration capability is available up to 1000C on suitable thermocouple types.

Our lab routinely calibrates at the following fixed points: 100C, 200C, 400C, 600C, 800C, 1000C, we work continuously to reduce the measurement uncertainty at each calibration temperature and new estimates are made every six months to ten months, ensuring any deviations are identified early so that results generated by the lab remain consistent and accurate.

We supply the top quality Mineral insulated thermocouple cable 100% through QA program supervised by the Chief Quality Officer. Continuously doing the job of raw materials purchase management, manufacturing processes optimization, staff training, etc. Our sales prices can always keep competitive all over the world.

Mineral insulated Compensating cable



Mineral insulated compensating cables have inner conductors of R/S Type (Cu- CuNi) and B Type (Cu-Cu) Compensating conductor with copper sheath.

SICC is one of the world's leading supplier of mineral insulated cable with 10 production lines and 4 million meters annual. Over the decades, we constantly refine and improve the technology, including accuracies, powder grades, sheath materials, configurations, as it remains the heart of our products to this day.

SPECIFICATIONS DETAILS

We can supply Mineral insulated compensating cables type R/S(Copper- Alloy#11 conductors), mainly 6.0mm O.D.

	External Diameter (mm)	Tolerance ±(mm)	Sheath thickness (mm)	Tolerance ±(mm)	Copper Wire Diameter(mm)	Tolerance ±(mm)	Alloy #11 wire Diameter(mm)	Tolerance ±(mm)
Duplex	6	0.05	0.6	0.05	1.2	0.13	1.13	0.1
					1.3		1.1	
					1.35		1.2	
Simple x	6	0.05	0.6	0.05	1.3	0.16	1.2	0.12
					1.57		1.25	
					1.35		1.2	

Also If you have a special mineral insulated compensation cable application, contact us without hesitate, our very experienced engineers will help you to find out the solution.

QUALITY GUARANTEE

We supply the top quality mineral insulated compensation cable(S/R thermocouple compensation wires) 100% through QA program supervised by the Chief Quality Officer. Continuously doing the job of raw materials purchase management, manufacturing processes optimization, staff training,etc. Our sales prices can always keep competitive all over the world.

SHIPPING DETAILS

SICC' produce bases are closed to Shanghai within 2 hours, as the most modern city that having a very convenient logistics network , this advantage can promise our mineral insulated cables are delivered to you by air and sea ship on time. Shipments are usually made in cartons measuring 70*70*20cm, for large shipments can be palletized.

All coils shipped are uniquely identified with SICC' shipping tag, it shows the customer's order number, specification, batch number, accuracy, length,date.

Pls contact us for a completed quote and we will be waiting here at 7*24.

Mineral insulated RTD cable



The mineral insulated RTD cable is combined with thin-film element, MgO powder insulated and sheath materials, as a compact entirety.

Its principle is according to the resistance changes as the temperature changes. The MI RTD cables are the base material for RTD sensors, its structure advantage with anti pollution and mechanical strength promise can be applied in the harsh environment.

SICC can supply all kinds of mineral insulated RTD cables, including 3,4,6,8 cores with Nickel and Copper conductors.

Also If you have a special MI RTD cable application, contact us without hesitate, our very experienced engineers will help you to find out the solution.

SPECIFICATIONS DETAILS

SHEATH MATERIALS												
	SS304/321(NI)			SS316(NI)			SS304/321(CU)			SS316(CU)		
DIA(mm/inch)	3	4	6	3	4	6	3	4	6	3	4	6
2/0.079	•	•	•	•	•	•	•	•	•	•	•	•
2.4/	•	•	•	•	•	•	•	•	•	•	•	•
3/0.12	•	•	•	•	•	•	•	•	•	•	•	•
3.2/	•	•	•	•	•	•	•	•	•	•	•	•
4/	•	•	•	•	•	•	•	•	•	•	•	•
4.5/0.177	•	•	•	•	•	•	•	•	•	•	•	•
4.8/	•	•	•	•	•	•	•	•	•	•	•	•
5/	•	•	•	•	•	•	•	•	•	•	•	•
6.0/0.236	•	•	•	•	•	•	•	•	•	•	•	•
6.4/0.25	•	•	•	•	•	•	•	•	•	•	•	•
8.0/0.313	•	•	•	•	•	•	•	•	•	•	•	•

QUALITY GUARANTEE

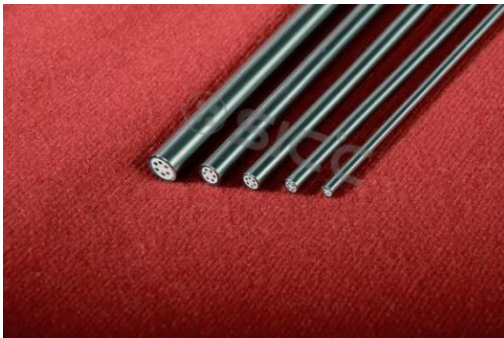
All SICC' RTD MI cables are manufactured to meet the requirements specified in calibration results for all mineral insulated cable with each shipment, including batch number, raw materials chemistry, lab environment condition,etc. Each order has only one job number for tracking.

We work continuously to reduce the measurement uncertainty at each calibration temperature and new estimates are made every six months to ten months,ensuring any deviations are identified early so that results generated by the lab remain consistent and accurate.

We supply the top quality MI RTD cable 100% through QA program supervised by the Chief Quality Officer. Continuously doing the job of raw materials purchase management, manufacturing processes optimization, staff training, etc, our sales prices can always keep competitive all over the world.

Mineral insulated heating cable

The mineral insulated heating cable are combined with heating conductors, MgO powder insulated and sheath material as a compact entirety. It has excellent mechanical strength and corrosion resistance.



SICC is one of the world's leading supplier of mineral insulated cable with 10 production lines and 4 million meters annual, we can supply mineral insulated heating cable with stainless steel, copper, inconel sheath.

1. Mineral insulated stainless steel cable can meet the requirements of high temperature conditions and large heating power(up to 269W/m).The maximum withstanding temperature can reach at 600C, the range of conductor resistance is 28000-19.2Ω/km.

2. Mineral insulated copper cable can meet the requirements of high temperature conditions and heat tracing for long distance pipelines. The maximum withstanding temperature can reach at 250C,the range of conductor resistance is 480-0.5Ω/km.

3. Mineral insulated inconel cable can meet the requirements of high temperature conditions and heat tracing for long distance pipelines, The maximum withstanding temperature can reach at 400C,the range of conductor resistance is 28000-19.2Ω/km.

SPECIFICATIONS DETAILS

Resistance at 20(ohm/m)											
DIA(MM)	1CORE	2CORE	3CORE	4CORE	6CORE	DIA(MM)	1CORE	2CORE	3CORE	4CORE	6CORE
1	28	114*2				3.2	1.1	12*2	3.9*3	7.0*4	
	13.5	77*2						7.6*2			
	9	37*2						3.6*2			
1.4		42*2				3.4	0.9				
1.6	11	30*2				4	1.6	7.39*2	5.2*3		
	2.4	20*2					0.46	4.91*2	2.43* 3		
		60*2						2.2*2			
		75*2				4.3					6.0*6
		77.5*2				4.5				5.43*4	
		45*2				4.6	1.26				
		14.5*2				4.8	1.5	3.3*2	3.6*3	12.0*4	4.7*6
2.3			15.8*3					1.6*2	3.3*3	9.4*4	
2.4	4.6	21*2	6.9*3	55*4	55*6					8.0*4	
	1.1	13.7*2		42*4						5.6*4	
		42*2				5			3.3*3		
		34*2							1.56*3		
		57*2				5.1			1.6*3		
		6.4*2				5.8					3.25*6
2.8		15.3*2	10.6*3	41*4	13.34 *6	5.9				2.8*4	
		10.1*2				6			2.3*3		3.0*6
		5.98*2				6.4	0.8		0.97* 3	4.0*4	
		4.7*2				7			1.7*3		
3		8.6*2				7.1					2.15*6
3.2	2.4	26*2	8.5*3	32*4	10.6*6	8			1.3*3		1.69*6

QUALITY GUARANTEE

All SICC' MI heating cables are manufactured to meet the requirements specified in calibration results for all mineral insulated cable with each shipment, including batch number, raw materials chemistry, lab environment condition, etc, each order has only one job number for tracking.

We work continuously to reduce the measurement uncertainty at each calibration temperature and new estimates are made every six months to ten months, ensuring any deviations are identified early so that results generated by the lab remain consistent and accurate.

We supply the top quality mineral insulated heating elements cable 100% through QA program supervised by the Chief Quality Officer. Continuously doing the job of raw materials purchase management, manufacturing processes optimization, staff training, etc. Our sales prices can always keep competitive all over the world.

Temperature sensor probe

THERMOCOUPLE PROBE

We use mineral insulated cable to make MI cable probes and the probes can be assembly to different kinds of thermocouples.



The specifications of thermocouple probe are from DIA0.25 to 12.7mm or 0.010 to 0.500 inch with SS, Inconel sheath, etc.

1.SPECIFICATIONS DETAILS

Type	Name of Material	Application Range
K	NiCr-NiSi	-200 to 1200°C
J	Fe-CuNi	-40 to 750°C
T	Cu-CuNi	-200 to 350°C
E	NiCr-CuNi	-200 to 900°C
N	NiCrSi-NiSi	-200 to 1200°C

SHEATH MATERIALS

	SS304/321		SS316		SS310		INCONEL600		NICROBELL	
DIA(MM/inch)	Simplex	Duplex	Simplex	Duplex	Simplex	Duplex	Simplex	Duplex	Simplex	Duplex
0.25/0.01	•		•		•		•			
0.5/0.02	•		•		•		•			
1.0/0.04	•		•		•		•			
1.5/0.06	•		•		•		•		•	
1.6/0.062	•		•		•		•		•	
2.0/0.079	•	•	•	•	•	•	•	•	•	•
2.4/	•	•	•	•	•	•	•	•	•	•
3.0/0.12	•	•	•	•	•	•	•	•	•	•
3.2/0.125	•	•	•	•	•	•	•	•	•	•
4.0/	•	•	•	•	•	•	•	•	•	•
4.5/0.177	•	•	•	•	•	•	•	•	•	•
4.8/0.188	•	•	•	•	•	•	•	•	•	•
5.0/	•	•	•	•	•	•	•	•	•	•
6.0/0.236	•	•	•	•	•	•	•	•	•	•
6.4/0.25	•	•	•	•	•	•	•	•	•	•
8.0/0.313	•	•	•	•	•	•	•	•	•	•
9.5/0.375	•	•	•	•	•	•	•	•	•	•
10/	•	•	•	•	•	•	•	•	•	•

RTD PROBE

The RTD probe is composed of an element, sheath, lead wire and connector, its working principle is the resistance of a metal changes with temperature. An electrical current is transmitted through the RTD element located in proximity to the area where temperature is to be measured, the resistance value is then measured by an instrument.

1.SPECIFICATIONS DETAILS

SICC use our mineral insulated cables to make RTD probes, the specifications of RTD probe are from DIA2.0 to 8.0mm or 0.079 to 0.313 inch. RTD sensor probe has 3,4,6 cores, Nickel and Copper conductors.

SHEATH MATERIALS												
	SS304/321(NI)			SS316(NI)			SS304/321(CU)			SS316(CU)		
DIA(mm/inch)	3	4	6	3	4	6	3	4	6	3	4	6
2/0.079	•	•	•	•	•	•	•	•	•	•	•	•
2.4/	•	•	•	•	•	•	•	•	•	•	•	•
3/0.12	•	•	•	•	•	•	•	•	•	•	•	•
3.2/	•	•	•	•	•	•	•	•	•	•	•	•
4/	•	•	•	•	•	•	•	•	•	•	•	•
4.5/0.177	•	•	•	•	•	•	•	•	•	•	•	•
4.8/	•	•	•	•	•	•	•	•	•	•	•	•
5/	•	•	•	•	•	•	•	•	•	•	•	•
6.0/0.236	•	•	•	•	•	•	•	•	•	•	•	•
6.4/0.250	•	•	•	•	•	•	•	•	•	•	•	•
8.0/0.313	•	•	•	•	•	•	•	•	•	•	•	•

2.QUALITY GUARANTEE

We supply the top quality thermocouple and RTD probes 100% through QA program supervised by the Chief Quality Officer. Continuously doing the job of raw materials purchase management, manufacturing processes optimization, staff training,etc. Our sales prices can always keep competitive all over the world.

SICC can supply all types of mi thermocouple and RTD probes for temperature sensors.If you have a special application, pls contact our sales department to find out the solution, we will be waiting here at 7*24.

3.SHIPPING DETAILS



SICC' produce bases are closed to Shanghai within 2 hours, as the most modern city that having a very convenient logistics network , this advantage can promise our mineral insulated cables are delivered to you by air and sea ship on time. Shipments are usually made in cartons measuring 70*70*20cm, for large shipments can be palletized.

All coils shipped are uniquely identified with SICC' shipping tag, it shows the customer's order number, specification, batch number, accuracy, length,date.

Pls contact us for a completed quote and we will be waiting here at 7*24.



Global sales

Shipping Coil Sizes And Weight			
Common Sheath Diameters		Approximate Weight at 100 ft (30.48 meters)	
<u>inch</u>	<u>mm</u>	<u>lbs</u>	<u>lbs</u>
		2-wire	4-wire
.020"	0.5 mm	0.07	0.08
.040"	1.0 mm	0.29	0.3
.059"	1.5 mm	0.65	0.68
.062"	1.6 mm	0.71	0.25
.118"	3.0 mm	2.5	2.7
.125"	3.2 mm	3	3.1
.188"	4.8 mm	6.7	6.9
.236"	6.0 mm	10.1	10.2
.250"	6.4 mm	11.3	11.5
.313"	8.0 mm	18	18.6
.375"	9.5 mm	26.3	26.8
.500"	12.7 mm	45.3	48.4

Accuracies

Operating limits and accuracies of thermocouples (IEC 60584, ASTM E230)

The following table contains permissible tolerance values of IEC 60584-2 incl. the tolerance values of ASTM E230 standard which is common in North America:

Tolerance values of the thermocouples per IEC 60584-2 / ASTM E230 (Reference temperature 0 °C)

Model	Thermocouple	Tolerance value per	Class	Temperature range	Tolerance value
K	NiCr-NiAl (NiCr-Ni)	IEC 60584 part 2	1	-40 ... +1000 °C	$\pm 1.5 \text{ °C or } 0.0040 \cdot t ^{1)2)}$
			2	-40 ... +1200 °C	$\pm 2.5 \text{ °C or } 0.0075 \cdot t $
		N	NiCrSi-NiSi	Special	0 ... +1260 °C
Standard	0 ... +1260 °C			$\pm 2.2 \text{ °C or } \pm 0.75 \%$	
J	Fe-CuNi	IEC 60584 part 2	1	-40 ... +750 °C	$\pm 1.5 \text{ °C or } 0.0040 \cdot t $
			2	-40 ... +750 °C	$\pm 2.5 \text{ °C or } 0.0075 \cdot t $
		ASTM E230	Special	0 ... +760 °C	$\pm 1.1 \text{ °C or } \pm 0.4 \%$
Standard	0 ... +760 °C		$\pm 2.2 \text{ °C or } \pm 0.75 \%$		
E	NiCr-CuNi	IEC 60584 part 2	1	-40 ... +800 °C	$\pm 1.5 \text{ °C or } 0.0040 \cdot t $
			2	-40 ... +900 °C	$\pm 2.5 \text{ °C or } 0.0075 \cdot t $
		ASTM E230	Special	0 ... +870 °C	$\pm 1.0 \text{ °C or } \pm 0.4 \%$
Standard	0 ... +870 °C		$\pm 1.7 \text{ °C or } \pm 0.5 \%$		
T	Cu-CuNi	IEC 60584 part 2	1	-40 ... +350 °C	$\pm 0.5 \text{ °C or } 0.0040 \cdot t $
			2	-40 ... +350 °C	$\pm 1.0 \text{ °C or } 0.0075 \cdot t $
			3	-200 ... +40 °C	$\pm 1.0 \text{ °C or } 0.015 \cdot t $
		ASTM E230	Special	0 ... +370 °C	$\pm 0.5 \text{ °C or } \pm 0.4 \%$
			Standard	-200 ... 0 °C	$\pm 1.0 \text{ °C or } \pm 1.5 \%$
R	Pt13%Rh-Pt	IEC 60584 part 2	1	0 ... +1600 °C	$\pm 1.0 \text{ °C or } \pm [1 + 0.003 (t - 1100)] \text{ °C}$
			2	0 ... +1600 °C	$\pm 1.5 \text{ °C or } \pm 0.0025 \cdot t $
		ASTM E230	Special	0 ... +1480 °C	$\pm 0.6 \text{ °C or } \pm 0.1 \%$
Standard	0 ... +1480 °C		$\pm 1.5 \text{ °C or } \pm 0.25 \%$		
B	Pt30%Rh-Pt6%Rh	IEC 60584 part 2	2	+600 ... +1700 °C	$\pm 0.0025 \cdot t $
			3	+600 ... +1700 °C	$\pm 4.0 \text{ °C or } \pm 0.005 \cdot t $
		ASTM E230	Special	-	-
		Standard	+870 ... +1700 °C	$\pm 0.5 \%$	

1) |t| is the value of the temperature in °C without consideration of the sign
2) The greater value applies

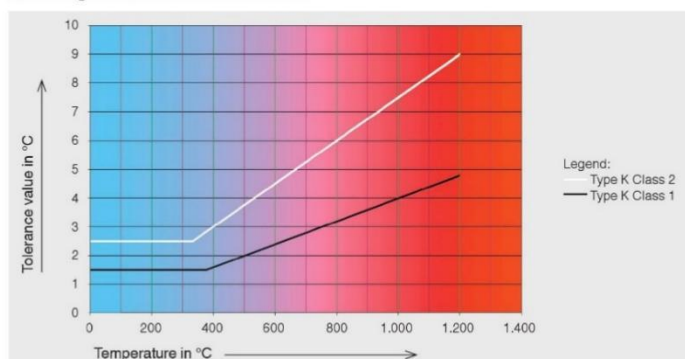
There are different notations of type K thermocouples in Europe and North America:

Europe: NiCr-NiAl or NiCr-Ni

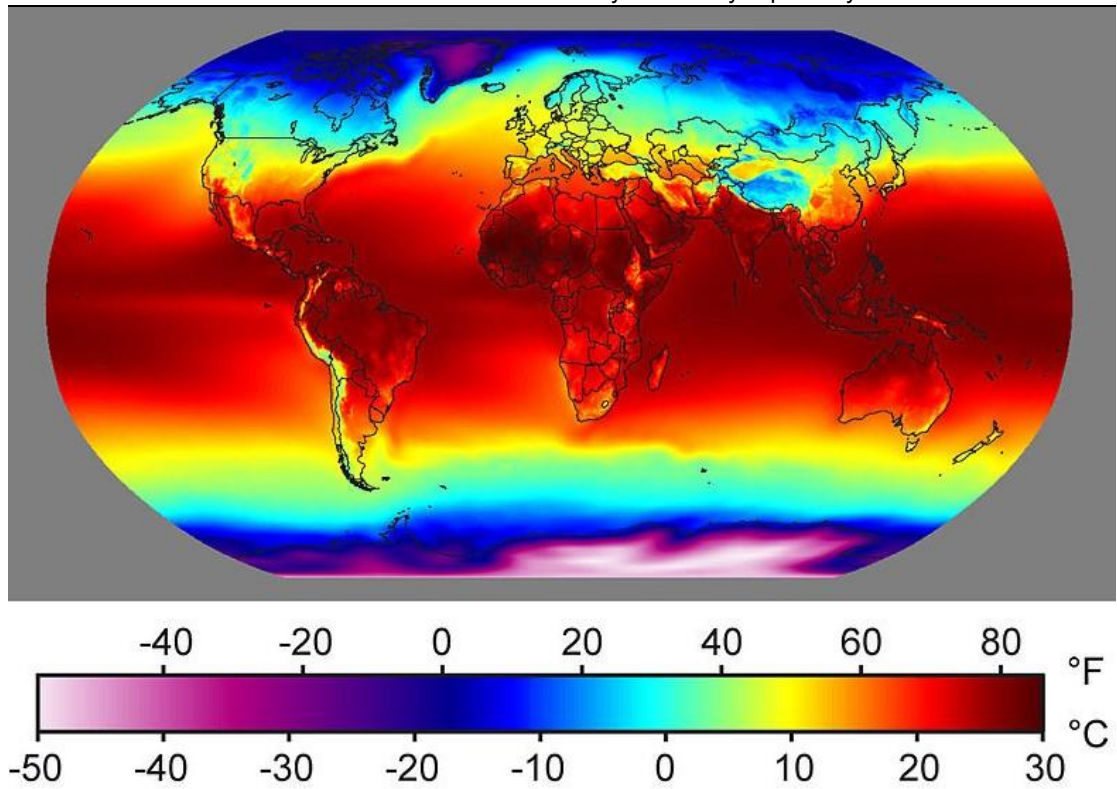
North America: Ni-Cr / Ni-Al

There is no physical difference, it is just the naming caused by historical reasons.

For the tolerance value of thermocouples, a cold junction temperature of 0 °C has been taken as the basis. When using a compensating cable or thermocouple cable, an additional measuring deviation must be considered.



Example:
Tolerance value of the accuracy classes 1 and 2 of thermocouple type K



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